MONTHLY WEATHER REVIEW.

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INTRODUCTION.

The MONTHLY WEATHER REVIEW for January, 1903, is based on data from about 3300 stations, classified as follows:

Weather Bureau stations, regular, telegraph and mail, 160; West Indian service, cable and mail, 8; River and Flood service, rainfall only, 49, river and rainfall, 162; voluntary observers, domestic and foreign, 2565; total Weather Bureau Service, 2944; Canadian Meteorological Service, by telegraph and mail, 20, by mail only, 13; Meteorological Service of the Azores, by cable, 2; Meteorological Office, London, by cable, 8; Mexican Telegraph Company, by cable, 3; Army Post Hospital reports, 18; United States Life-Saving Service, 9; Southern Pacific Company, 96; Hawaiian Meteorological Service, 75; Jamaica Weather Service, 130; Costa Rican Meteorological Service, 25; The New Panama Canal Company, 5; Central Meteorological Observatory of Mexico, 20 station summaries and printed daily bulletins and charts, based on simultaneous observations at about 40 stations; Mexican Federal Telegraph Service, printed daily charts, based on about 30 stations.

Special acknowledgment is made of the hearty cooperation of Prof. R. F. Stupart, Director of the Meteorological Service of the Dominion of Canada; Mr. Curtis J. Lyons, Territorial Meteorologist, Honolulu, H. I.; Señor Manuel E. Pastrana, Director of the Central Meteorological and Magnetic Observatory of Mexico; Camilo A. Gonzales, Director-General of Mexican Telegraphs; Capt. S. I. Kimball, Superintendent of the United States Life-Saving Service; Lieut. Commander W. H. H. Southerland, Hydrographer, United States Navy; H. Pittier, Director of the Physico-Geographic Institute, San José, Costa Rica; Commandant Francisco S. Chaves, Director of the Meteorological Service of the Azores, Ponta Delgada, St. Michaels, Azores; W. M. Shaw, Esq., Secretary, Meteorological Office, London; Rev. Josef Algué, S. J., Director, Philippine Weather Service; and H. H. Cousins, Chemist, in charge of the Jamaica Weather Office.

Attention is called to the fact that the clocks and self-registers at regular Weather Bureau stations are all set to seventy-fifth meridian or eastern standard time, which is exactly five hours behind Greenwich time; as far as practicable, only this standard of time is used in the text of the REVIEW, since all Weather Bureau observations are required to be taken and recorded by it. The standards used by the public in the United States and Canada and by the voluntary observers are believed to conform generally to the modern international system of standard meridians, one hour apart, beginning with Greenwich. The Hawaiian standard meridian is 157° 30′, or $10^h\ 30^m$ west of Greenwich. The Costa Rican standard of time is that of San José, $0^h\ 36^m\ 13^s$ slower than seventy-fifth meridian time, corresponding to $5^h\ 36^m$ west of Greenwich. Records of miscellaneous phenomena that are reported occasionally in other standards of time by voluntary observers or newspaper correspondents are sometimes corrected to agree with the eastern standard; otherwise, the local standard is mentioned.

Barometric pressures, whether "station pressures" or "sea-level pressures," are now reduced to standard gravity, so that they express pressure in a standard system of absolute measures.

FORECASTS AND WARNINGS.

By Prof. E. B. GARRIOTT, in charge of Forecast Division.

The month opened with a barometric disturbance of slight energy off the Texas coast. Moving northeastward, with increasing strength, this low pressure reached the lower Lake region on the morning of the 3d, and during that day it united on the New England coast with a storm of considerable intensity that apparently developed over the Carolinas during the 2d, and moved thence northeastward during the night of the 2–3d, attended on the middle Atlantic and south New England coasts by wind velocities of 30 to 48 miles an hour. Advisory messages in connection with this storm were telegraphed Atlantic ports from Hatteras to Eastport on the evening of the 2d, and warnings for high southeast winds were displayed on the Maine coast on the morning of the 3d.

The first important storm of the month on the Great Lakes advanced from the British Northwest Territory to the extreme upper Mississippi Valley during the 5th and 6th, with reported minimum barometric pressure 29.03 inches at St. Paul, Minn., at 8 p. m. of the 6th. During the 7th this storm moved south of east over the Lake region with barometer 29.02 inches at Grand Haven, Mich., at the morning report, and by the morning of the 8th had reached Nova Scotia. At 12:06 p. m. of the 8th the following message was cabled Lloyds, London:

> Severe storm will pass eastward from Newfoundland to-night.

The highest wind velocity reported in connection with this disturbance was 56 miles an hour at Cleveland, Ohio, during the night of the 7–8th. Snow fell generally from the upper Mississippi Valley over the Lake region and Ohio Valley, New York, and New England during the 7th, and a moderate cold wave swept southward over the central valleys and the Gulf States during the 7th and 8th, carrying the line of freezing temperature to the middle Gulf coast and northern Florida by the morning of the 9th. The snow, gales, and low temperature of this period were amply covered by the forecasts and special warnings.

The severest storm and cold wave of the month visited the central, southern, and eastern districts from the 10th to the 13th. This storm first assumed definite form over the lower valley of the Colorado River during the night of the 8th, and moved thence to the west Gulf States during the 9th and 10th with gradually decreasing barometric pressure. During the 11th the disturbance moved rapidly northeastward to the St. Lawrence Valley, attended by snow in northern and rain in southern districts east of the Mississippi River, and followed by clearing and much colder weather. On the morning of the 12th the line of zero temperature reached the Ohio River, and freezing temperature occurred to the middle coast of the Gulf of Mexico. By the following morning the line of freezing temperature had reached Tampa, Fla., and a minimum reading of 28° was noted at Jacksonville. On the Great Lakes a maximum wind velocity of 60 miles an hour, from the west, occurred at Buffalo, N. Y., and on the Atlantic coast a